Title: Assessing Knowledge Decay and Improving Student Satisfaction of Feedback using the Audience Response System

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Abstract

INTRODUCTION: Didactic lectures are traditional in medicine in an attempt to impart information on problematic topics and introduce difficult concepts. However the type of sustained low-level activity found in lectures does not promote effective learning or retention of knowledge. Knowledge retention following traditional didactic teaching often decays at an undesirable rate. The use of audience response systems (ARSs) has been suggested to improve and facilitate learning in a didactic lecture setting by increasing student participation, giving instant feedback, and improving knowledge retention. An ARS is being used on the Durham University Phase 1 Medical Programme to assess information decay in first year medical students. **METHOD:** 93 undergraduate medical students attended physiology lectures incorporating the use of the ARS KEEpad. KEEpad was used to ask the students an MCQ before the lecture to assess prior knowledge; at the end of the lecture to assess whether learning had occurred; and 5 weeks later to assess knowledge retention. At the end of the module students were asked to complete an evaluation form which included 2 questions on the use of the ARS. The form included a 6-point Likert scale with the descriptors on an even scale, and space for free-text comments. The 2 questions regarding use of the ARS were *The KEEpad audience response system gives me feedback on my progress* and *The KEEpad audience response system supports the learning experience*. **RESULTS:** Before the lecture was delivered 40% of the class selected the correct answer using the ARS, showing a moderate degree of prior knowledge of this topic. At this point the correct answer was not given. The same question was then asked at the end of the lecture and the percentage of students choosing the correct answer increased to 78%. Five weeks later the same question was put to the students, again using the ARS. The percentage of students selecting the correct answer decreased to 60%. The evaluation forms showed student satisfaction regarding use of the ARS was 100% and 98% respectively. **CONCLUSION:** The use of the ARS allowed us to show that learning occurred during the didactic lecture and that some knowledge decay had occurred after 5 weeks but was still higher than their prior knowledge. Students' satisfaction on the use of the ARS for feedback and the learning experience during lectures was extremely high. The ARS is a novel and useful tool to monitor knowledge retention in undergraduate medical education.